PROPOSED FIELD SAMPLING PLAN FOR INVESTIGATING SOIL GAS ANOMALIES AT IHSS 115, OPERABLE UNIT NO. 5, ROCKY FLATS PLANT, COLORADO

The soil gas survey at IHSS 115 identified three areas of anomalous concentrations of organic compounds. These three areas are identified as Areas A, B, and C on the enclosed maps (Figures 1 - 5). Area A is located near the center of the landfill just east of the abandoned storm sewer pipeline approximately 80 feet north of the South Interceptor Ditch (Figures 2 and 3). Figures 2 and 3 are contour maps of the concentrations of 1,1,1-trichloroethane (1,1,1-TCA) and trichloroethene (TCE), respectively, detected by the soil gas survey. Areas B and C are located west of Area A near the location of the former ponds. Figure 4 is a contour map of tetrachloroethene (PCE) concentrations within Areas B and C detected by the soil gas survey. Figure 5 is a contour map of trichloroethene (TCE) concentrations detected by the soil gas survey within Area B.

Section 7.2.1 of the OU5 Phase I RFI/RI Work Plan specifies that three boreholes be placed at up to three areas where plumes were identified by the soil gas survey resulting in a maximum of nine boreholes. The Work Plan further specifies that at each plume area, one borehole will be placed at the point of the highest soil gas reading, and two boreholes will be located downslope of that point within the plume identified by the soil gas survey. Although Table 7-1 of the Work Plan also implies that groundwater monitoring wells will be installed within the boreholes drilled at the highest reading within the plume, the text in Section 7.2.1 does not clearly specify the locations of these wells. Based on the results of discussion between DOE, CDH, and EPA, the borehole and groundwater sampling program outlined in the Work Plan will be modified as discussed below.

Due to the rough terrain within Area A, access to this area will not be possible with a drill rig. Therefore, it is proposed that two well points be installed at the locations indicated on Figures 2 and 3. These well points will be installed with a hydraulic rig mounted on a small all-terrain vehicle (ATV) which should have little trouble gaining access to the areas to be investigated. If groundwater is encountered in the well points, samples will be collected once. The well points will be installed, developed and sampled in accordance with DCN 93.02 to SOP GT.06, Monitoring Well and Piezometer Installation. Groundwater samples collected from these wells will be analyzed for the same constituents specified in Table 7-7 of the Work Plan for wells downgradient of IHSS 115. Water-level measurements will be also obtained in these wellpoints monthly through October 1993.

Four boreholes will be drilled within Areas B and C (Figures 4 and 5). Soil samples from these boreholes will be collected and analyzed in accordance with the specifications provided in the Work Plan (Section 7.2.1 and Table 7-7). Within Area B three boreholes will be drilled at the location of the three highest soil gas readings. The first borehole to be drilled, 58393, will be at the location of the highest soil gas readings. If groundwater is encountered in this borehole, a groundwater sample will be collected using the Hydropunch II in accordance with DCN 93.01 to SOP GW.06, Groundwater Sampling. This groundwater sample will be analyzed for the same constituents as specified in Table 7-7 of the Work Plan for wells downgradient of IHSS 115. The next borehole to be drilled within Area B, 58493, will be at the location of the second

highest soil gas readings. Groundwater, if encountered, will be sampled at this location using the Hydropunch II only if groundwater was not encountered in borehole 58393. Likewise, the third borehole within Area B, 58593, will be drilled at the location of the third highest soil gas readings, and groundwater will be sampled at this location only if it was not sampled at boreholes 58393 or 58493. In addition, a maximum of two well points will be installed adjacent to boreholes in which groundwater was encountered for the purposes of obtaining water-level measurements. Water-level measurements will be obtained in these wellpoints monthly through October 1993.

Due to the relatively low concentrations detected and the small size of the anomaly at Area C, only one borehole will be drilled. This borehole, 58693, will be drilled at the location of the highest soil gas readings. If groundwater is encountered in this borehole, a groundwater sample will be collected using the Hydropunch II and analyzed for the same constituents specified in Table 7-7 of the Work Plan for wells downgradient of IHSS 115. In addition, if groundwater is encountered in this borehole, a well point will be installed adjacent to this borehole so that water-level measurements may be obtained. Water-level measurements will be obtained in this wellpoint monthly through October 1993.

460

460

444

654

440

WATER TREATMENT PLANT

GAS LINE

MANHOLE

OLD OUTFALL PIPE

DRAINAGE DITCH 1955 - 1983

DISTURBED GROUND

FIGS 4 & 5

FIGS 2 & 3

N748,000

MANHOLE

6020

ABANDONED PRE-SID ROAD

6000

CATTAILS

RUBBLE PILES FOR COLLECTION BASIN

DISTURBED GROUND AND POSSIBLE PIT

INDICATED CORRECTED LOCATION OF FORMER PONDS

115

5980

5980

BURIED OUTFALL PIPE

6000

RADIOLOGICAL CONTROLLED AREA

BERM

SID

SURVEY BASE LINE

OLD METAL FLUME

INDICATED LOCATION OF GAS LINE

5980

Power Poles #65

OVERHEAD POWER LINES

5940

CREEK

WOMAN

6000

5980

5940

5960

E2,081,000

E2,083,000

MAP LEGEND

- STREAMS DITCHES DRAINAGE FEATURES
- PAVED ROADS
- DIRT ROADS
- 440 BUILDINGS
- 115 ORIGINAL LANDFILL AND SURFACE DISTURBANCE, (PRE - SID)
- LANDFILL AND DISTURBANCE (POST - SID)
- EPA/CDH EXTENSION OF LANDFILL BOUNDARY
- SURVEY BASELINE
- SOIL GAS SAMPLE LOCATION

N

0 100 200

SCALE: 1" = 200'

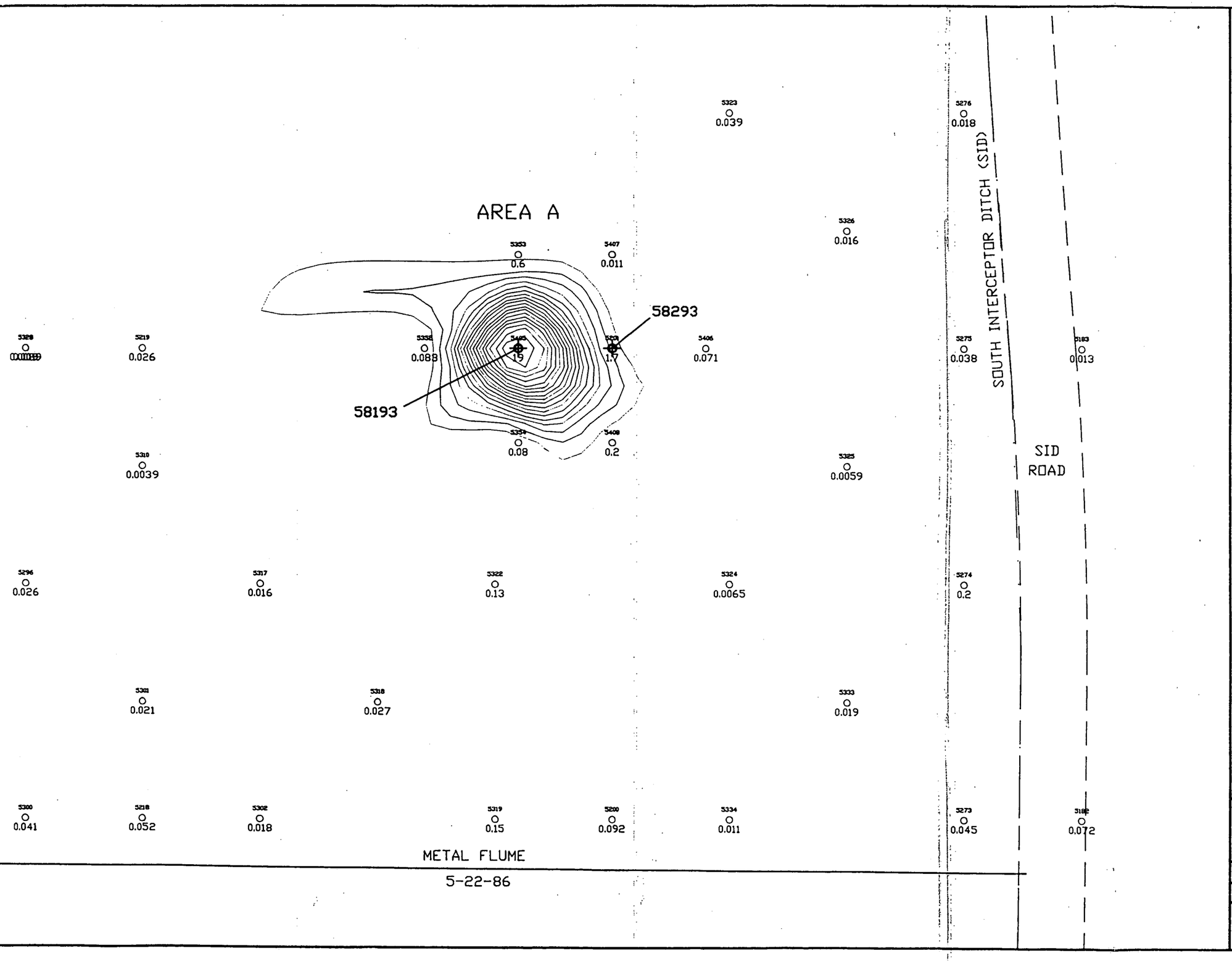
INDEX MAP

LANDFILL (IHSS115) SOIL GAS SURVEY

OU6 PHASE I RFI/RI IMPLEMENTATION

EG&G	9208.15	FIGURE 1
	MAY 1993	

xxx



MAP LEGEND

STREAMS DITCHES DRAINAGE FEATURES

DIRT ROADS

5322 0.13 SOIL GAS SAMPLE LOCATION AND CONCENTRATION

58293 WELLPOINT LOCATION

CONTOUR INTERVAL = 10

NOTE: SEE FIGURE 1 FOR AREA COVERED BY THIS FIGURE

N

0 10 20

SCALE: 1" = 20'

AREA A
TCE SOILGAS SURVEY RESULTS AND WELLPOINT LOCATIONS

LANDFILL (IHSS115) STAGE 3 INVESTIGATION

OU5 PHASE I RFI/RI IMPLEMENTATION

9208.15.02.03

MAY 1993

FIGURE 2

AREAA

5328 0.0072

5219 0.016

5210 0.012

5296 0.039

5317 0.009

5322 0.084

5324 0.017

5301 0.038

5318 0.014

5333 0.0092

5300 0.026

5218 0.011

5302 0.011

5319 0.012

5320 0.036

5334 0.011

5353 0.24

5407 0.015

5352 0.0092

5405 13

5320 13

5406 0.06

5354 0.2

5408 0.15

58293

58193

5323 0.025

5326 0.0091

5325 0.004

5276 0.024

5275 0.01

5183 0.0033

5274 0.0038

5273 0.012

5182 0.012

SOUTH INTERCEPTOR DITCH (SID)

SID ROAD

METAL FLUME

5-22-86

MAP LEGEND

STREAMS DITCHES DRAINAGE FEATURES

DIRT ROADS

5322 0.084 SOIL GAS SAMPLE LOCATION AND CONCENTRATION

58293 WELLPOINT LOCATION

CONTOUR INTERVAL = 10

NOTE: SEE FIGURE 1 FOR AREA COVERED BY THIS FIGURE

N

0 10 20

SCALE: 1" = 20'

AREA A
1,1,1-TCA SOILGAS SURVEY RESULTS AND WELLPOINT LOCATIONS

LANDFILL (IHSS115) STAGE 3 INVESTIGATION

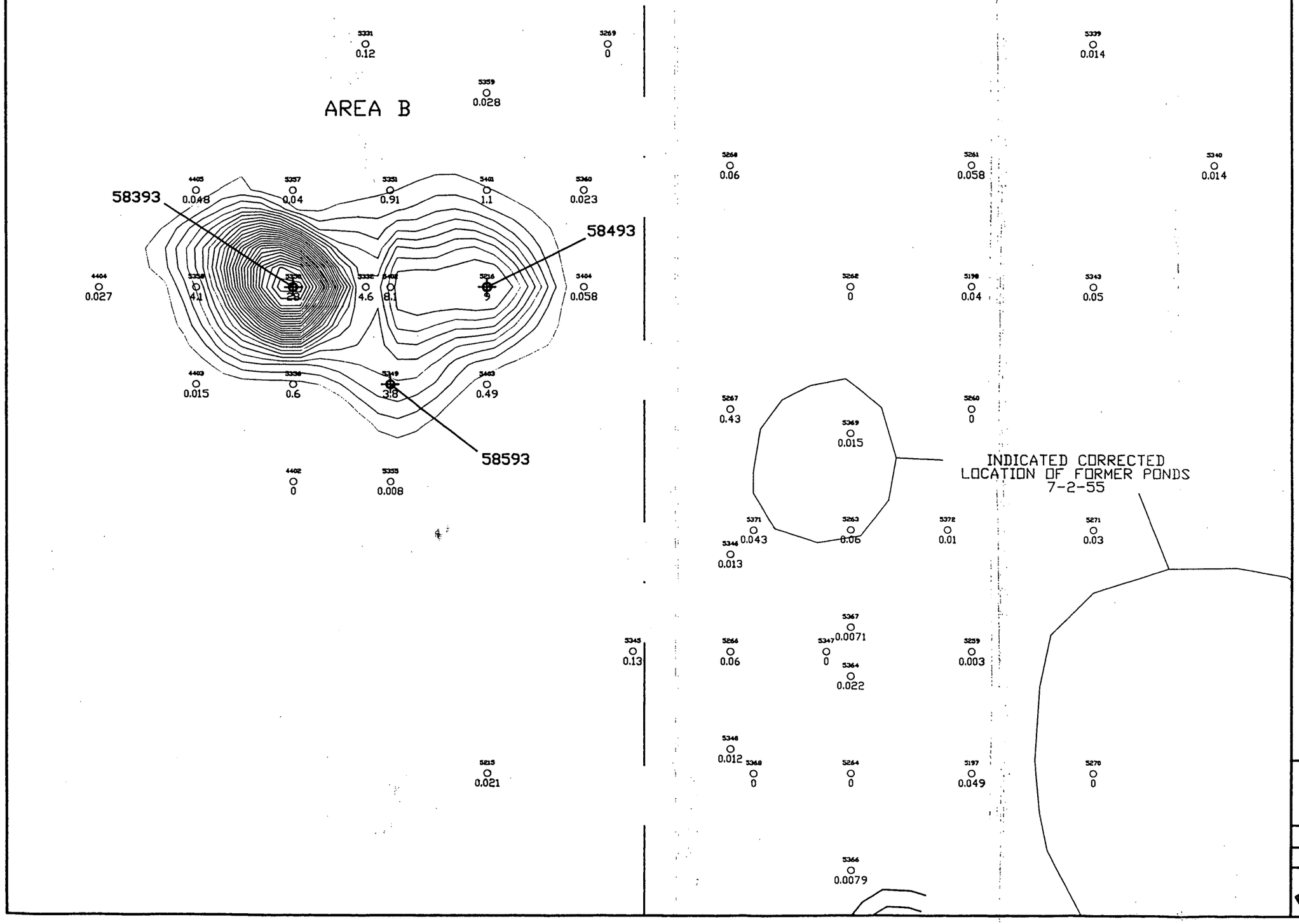
OU5 PHASE I RFI/RI IMPLEMENTATION

9208.15.02.03

MAY 1993

FIGURE 3

AREAA



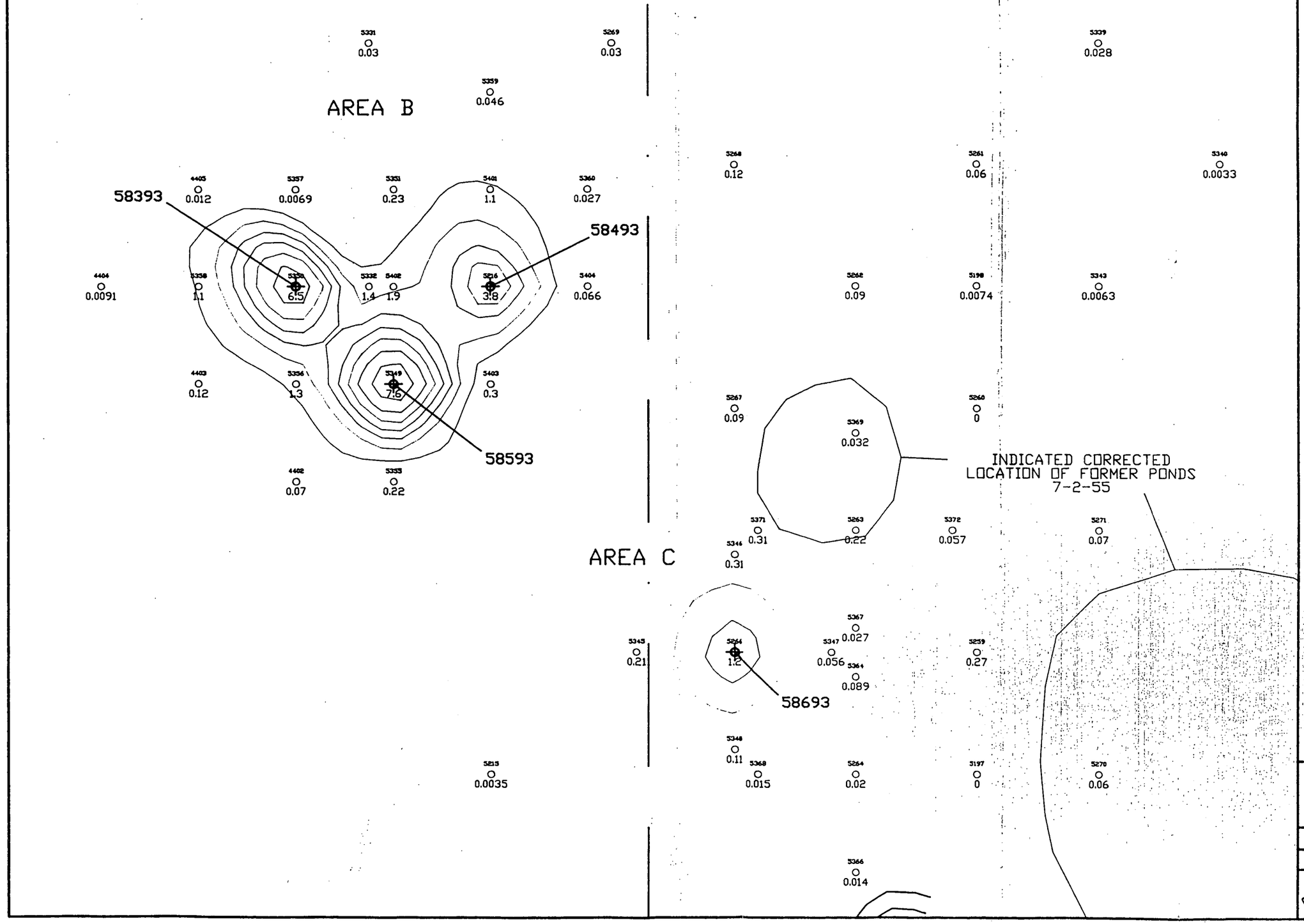
AREA B
TCE SOILGAS SURVEY RESULTS AND BOREHOLE LOCATIONS

LANDFILL (IHSS115) STAGE 3 INVESTIGATION

OU5 PHASE I RFI/RI IMPLEMENTATION

EG&G	9208.15.02.03	FIGURE 5
	MAY 1993	

AREAB



MAP LEGEND

STREAMS DITCHES DRAINAGE FEATURES

DIRT ROADS

5267 0.09 SOIL GAS SAMPLE LOCATION AND CONCENTRATION

58293 BOREHOLE LOCATION

CONTOUR INTERVAL = 10

NOTE: SEE FIGURE 1 FOR AREA COVERED BY THIS FIGURE

N

0 10 20

SCALE: 1" = 20'

AREA B AND C PCE SOILGAS SURVEY RESULTS AND WELLPOINT LOCATIONS

LANDFILL (IHSS115) STAGE 3 INVESTIGATION

OU6 PHASE I RFI/RI IMPLEMENTATION

9208.15.02.03

MAY 1993

FIGURE 4

AREA8